west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-2175D
Plant ID No.:	039-00051
Applicant:	Dominion Transmission, Inc. (Dominion)
Facility Name:	Cornwell Station
Location:	Clendenin, Kanawha County
SIC Code:	4922
NAICS Code:	486210
Application Type:	Modification
Received Date:	February 8, 2012
Engineer Assigned:	Jerry Williams, P.E.
Fee Amount:	$2,000.00
Date Received:	February 8, 2012
Complete Date:	February 29, 2012
Due Date:	May 29, 2012
Applicant Ad Date:	February 14, 2012
Newspaper:	*Charleston Daily Mail*
UTM's:	Easting: 476.19 km Northing: 4259.58km Zone: 17
Description:	Modification of a natural gas compressor station consisting of the replacement of a compressor engine.

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-2175D:

Dominion is proposing to replace a natural gas compressor engine at its Cornwell facility. The Cornwell Station currently operates under Title V Permit Number R30-03900051-2007.

The proposed equipment changes with this permit application include the following:

1. Replacement of the existing Cooper Reciprocating Internal Combustion Engine (RICE) denoted as 001-03, which is used for compression, with a new AJAX DPC-2804LE RICE. The new engine will be a 2 stroke lean burn engine and will be equipped with a

catalytic converter to reduce carbon monoxide (CO) and volatile organic compound (VOC) emissions.

According to Title V Permit Number R30-03900051-2007, the Cornwell Station is a natural gas transmission and production station covered by SIC Code 4922. The natural gas is compressed to a higher pressure by the 13 integral compressors powered by the natural gas-fired reciprocating engines. The station also has one (1) 23 mmscf/day glycol dehydration unit with flare and a 4.2 mmBtu/hr boiler. The dehydration system is on a production line as are 3 of the engines.

All engines not covered under R13-2175C, which only addresses one (1) engine, Engine 07, Caterpillar - Model 63512 are grandfathered engines.

SITE INSPECTION

A site inspection was conducted on August 4, 2010 by Mike Rowe of DAQ Enforcement. According to Air Trax, the facility was found to be operating in compliance at that time.

Directions as given in the permit application are as follows:

Take I-79 to Exit 19 to WV State Route 4. Take Route 4 North to Clendenin, cross Elk River on Queen Shoals Road (Route 1). Turn left onto River Haven Road (Route 1/6), and proceed 2.5 miles to station.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

According to Title V Permit Number R30-03900051-2007, the Cornwell Station has the potential to emit 531.28 tons/yr of CO, 3,421.63 tons/yr of NO_x, 433.80 tons/yr of VOC, 24.55 tons/yr of Formaldehyde and 39.08 tons/yr of HAPs. Due to this facility's potential to emit over 100 tons per year of criteria pollutants, over 10 tons per year of a single HAP, and over 25 tons per year of aggregate HAPs, Dominion is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

Emissions associated with this modification application consist of the combustion emissions from the proposed compressor engine (EN09). The following table indicates which methodology was used in the emissions determination:

Emission Point ID#	Process Equipment	Calculation Methodology
EN09	750 hp Ajax DPC-2804LE Compressor Engine	Manufacturer's Data / EPA AP-42 Emission Factors

Maximum controlled point source emissions from the proposed changes were calculated by Dominion and checked for accuracy by the writer and are summarized in the table below.

Emission Point ID	Emission Unit ID	Process Unit	Pollutant	Maximum Controlled Emission Rate	
				Hourly (lb/hr)	Annual (ton/year)
EN09	001-10	750 HP Ajax DPC-2804LE Compressor Engine	Nitrogen Oxides	1.66	7.20
			Carbon Monoxide	1.24	5.40
			Sulfur Dioxide	0.01	0.02
			Particulate Matter-10	0.23	1.00
			Volatile Organic Compounds	0.50	2.20
			Formaldehyde	0.33	1.43
			Total HAPs	0.47	2.06
			Carbon Dioxide Equivalent	675	2,958

The emission changes associated with this application are shown in the following table:

Pollutant	Proposed Compressor Engine (Ajax DPC-2804LE) (tons/year)	Shutdown Compressor Engine (Cooper GMEX-8) (tons/year)	Emissions Change (tons/year)
Nitrogen Oxides	7.20	129.39	-122.19
Carbon Monoxide	5.40	19.14	-13.74
Sulfur Dioxide	0.02	14.22	-14.20
Particulate Matter-10	1.00	0.23	0.77
Volatile Organic Compounds	2.20	14.45	-12.25
Formaldehyde	1.43	1.31	0.12
Total HAPs	2.06	1.60	0.46
Carbon Dioxide Equivalent	2,958	NA	NA

REGULATORY APPLICABILITY

Unless otherwise stated WVDEP DAQ did not determine whether the permittee is subject to an area source air toxics standard requiring Generally Achievable Control Technology (GACT) promulgated after January 1, 2007 pursuant to 40 CFR 63, including the area source air toxics provisions of 40 CFR 63, Subpart ZZZZ.

The following rules apply to this modification:

45CSR4 (To Prevent and Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to an Objectionable Odor or Odors)

45CSR4 states that an objectionable odor is an odor that is deemed objectionable when in the opinion of a duly authorized representative of the Air Pollution Control Commission (Division of Air Quality), based upon their investigations and complaints, such odor is objectionable. No odors have been deemed objectionable.

45CSR13 (Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation)

45CSR13 applies to this source due to the fact that the changes proposed under this permitting action results in the facility being subject to a substantive requirement of an emission control rule (40CFR60 Subpart JJJJ). Therefore, Dominion is required to submit a modification application. Dominion has published the required Class I legal advertisement notifying the public of their permit application, and paid the appropriate application fee (modification).

45CSR16 (Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60)

45CSR16 applies to this source by reference of 40CFR60 Subpart JJJJ. Dominion is subject to the recordkeeping, monitoring, and testing required by 40CFR60 Subpart JJJJ.

45CSR30 (Requirements for Operating Permits)

This rule provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act, and provides for a transition period prior to the implementation of the permitting system.

The source is subject to 45CSR30. Changes authorized by this permit must also be incorporated into the facility's Title V operating permit. Commencement of the operations authorized by this permit shall be determined by the appropriate timing limitations associated with Title V permit revisions per 45CSR30.

40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE))

Dominion's compressor engine (EN09) is subject to 40CFR60 Subpart JJJJ, which sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine. Dominion is subject to this rule because the engine will commence construction after June 12, 2006, and is manufactured on or after January 1, 2008 and is a lean burn engine will maximum engine power equal to or greater than 500 hp and less than 1,350 hp.

The proposed 750 hp engine (EN09) is subject to this rule. The emission limits for this engine is the following: NO_x – 1.0 g/hp-hr (1.66 lb/hr); CO – 2.0 g/hp-hr (3.31 lb/hr); and VOC – 0.7 g/hp-hr (1.16 lb/hr). Based on the manufacturer's specifications for these engines, the emission standards will be met.

Because these engines will not be certified by the manufacturer, Dominion will be required to perform an initial performance test within 180 days from startup, and subsequent testing every 8,760 hours or 3 years, whichever comes first. In addition, Dominion will be required to maintain and operate the engine in a manner consistent with good air pollution control practices for minimizing emissions, and keep a maintenance plan.

The following regulations do not apply to the facility:

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

As shown in the table below, Dominion is not subject to 45CSR14 or 45CSR19 review.

Pollutant	**PSD (45CSR14) Threshold (tpy)**	**NANSR (45CSR19) Threshold (tpy)**	**Current Cornwell PTE (tpy)**	**PSD or NANSR Facility**	**R13-2175D Emission Increase (tpy)**	**Significant Increase Threshold (tpy)**	**R13-2175D Significant Increase?**
Carbon Monoxide	250	NA	531	Yes	5.40	100	No
Nitrogen Oxides	250	100	3,422	Yes	7.20	40	No
Sulfur Dioxide	250	100	0.67	No	0.02	40	No
Particulate Matter 2.5	250	100	6	No	1.00	15	No
Ozone (VOC)	250	NA	434	Yes	2.20	40	No
Greenhouse Gas (CO_2e)	100,000	NA	>100,000	Yes	2,958	75,000	No

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Various non-criteria regulated pollutants are emitted from the incomplete combustion of natural gas. However, these emissions should not adversely impact the quality of the surrounding ambient air at the concentrations, discharge rates, and point of introduction into the atmosphere as described in the permit application.

AIR QUALITY IMPACT ANALYSIS

The changes to this facility do not constitute a major modification under 45CSR14. Based on the nature of the emissions and the annual emission rate, no air quality analysis was performed. However, air dispersion modeling will be required if the Director finds existing circumstances and/or submitted data that provide cause for an assessment to be made concerning whether this facility may interfere with attainment or maintenance of an applicable ambient air quality standard or cause or contribute to a violation of an applicable air quality increment.

SOURCE AGGREGATION

"Building, structure, facility, or installation" is defined as all the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous and adjacent properties, and are under the control of the same person.

The Cornwell Station is located approximately 21 miles from an existing station called Orma. They are not considered to be on contiguous or adjacent property as Dominion does not own the land in between the facilities. Dominion does operate and have a right-of-way lease on pipeline that will connect the two facilities. As both these facilities are existing stations holding current federal permits to operate (Title V), it has been previously determined that they are separate facilities for the purposes of aggregation. Dominion does not own or operate any production wells within 10 miles of Cornwell Station.

Both the Cornwell and Orma Station will operate under SIC Code 4922 – Natural Gas Transmission. Therefore, Cornwell Station does share the same SIC code as surrounding compressor stations.

Both the Cornwell Station and Orma Station are both owned and operated by the same parent company, Dominion Resources, Inc.

Because the facilities are not considered to be on contiguous or adjacent properties, the emissions from the Cornwell Station should not be aggregated with other facilities in determining major source or PSD status.

CHANGES TO PERMIT R13-2175C

The following is an overview of each of the changes to Permit R13-2175C:

1. Replacement of a natural gas compressor engine. In addition, this compressor engine (EN09) is subject to 40CFR60 Subpart JJJJ, which sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine. Because these engines will not be certified by the manufacturer, Dominion will be required to perform an initial performance test within 180 days from startup, and subsequent testing every 8,760 hours or 3 years, whichever comes first. In addition, Dominion will be required to maintain and operate the engine in a manner consistent with good air pollution control practices for minimizing emissions, and keep a maintenance plan.

MONITORING OF OPERATIONS

Dominion will be required to perform the following monitoring:

1. Monitor and record quantity of natural gas consumed for all combustion sources.

Dominion will be required to perform the following recordkeeping:

1. Maintain records of the amount of natural gas consumed in each combustion source.
2. Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location
3. Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
4. Maintain records of the visible emission opacity tests conducted per the permit.
5. Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engines and ancillary equipment.
6. The records shall be maintained on site or in a readily available off-site location maintained by Dominion for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates Dominion's Cornwell Station meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Kanawha County location should be granted a 45CSR13 modification permit for their facility.

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Jerry Williams, P.E.
Engineer

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Date